NISTIR 6890

Fire Resistance Determination and Performance Prediction Research Needs Workshop: Proceedings

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Editor

National Institute of Standards and Technology
Technology Administration, U.S. Department of Commerce

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Building and Fire Research Laboratory

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U.S. Department of Commerce
Donald L. Evans, Secretary

Technology Administration
Phillip J. Bond, Under Secretary of Commerce for Technology

National Institute of Standards and Technology
Arden L. Bement, Jr., Director

B. Goals of Workshop
William Grosshandler, Chief, Fire Research Division
Building and Fire Research Laboratory, NIST

FIRE RESISTANCE DETERMINATION & PERFORMANCE PREDICTION

RESEARCH NEEDS WORKSHOP

National Institute of Standards and Technology
Gaithersburg, Maryland USA
February 19-20, 2002

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FIRE RESISTANCE DETERMINATION & PERFORMANCE PREDICTION

Vision: A rational balance of competing demands for function, aesthetics, fire safety and economy in tall buildings

- **enabled by scientifically-based performance predictions, and**
- **endorsed by all major stakeholders.**

Time Horizon: Ten years

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FIRE RESISTANCE DETERMINATION & PERFORMANCE PREDICTION

Developments needed to achieve vision:

- **Validated tools (*instrumentation, computational methods, measurement techniques*) necessary to predict performance of *building materials, products, structural elements*, and *systems* up to the point of imminent fire-caused collapse of tall buildings**

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FIRE RESISTANCE DETERMINATION & PERFORMANCE PREDICTION

Objectives of Workshop:

- **Review current practices for achieving fire resistance.**
- **Explore promise of fire dynamics simulations and structural behavior predictions.**
- **Identify opportunities in materials science.**
- **Identify opportunities/needs in advanced computational methods; and for new measurement, instrumentation, and test methods.**

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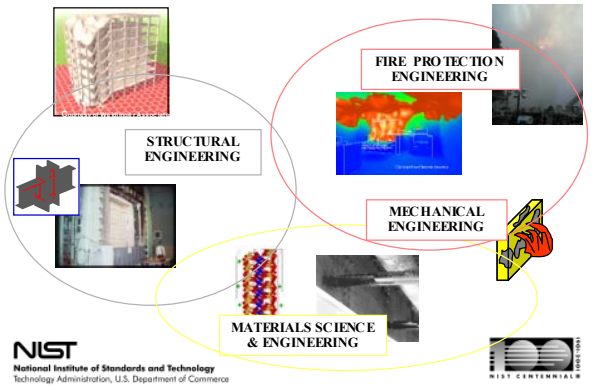
WHAT IS WITHIN OUR CHARTER?



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WHAT IS OUTSIDE OUR CHARTER?

- **Buildings less than ten stories tall**
- **Industrial facilities**
- **Impact damage**
- **Blast protection**
- **Progressive collapse not initiated by fire**
- **Incremental improvements to current codes and standards**

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WORKSHOP PRODUCTS

- Report summarizing objectives and general consensus on priority, approach, funding options and associated timelines, and required follow-on actions
- Roadmap to streamline implementation of research results into international product standards, fire codes, and construction practices

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WORKSHOP MECHANICS (1/2)

Invited presentations, with comments and discussion throughout (Tuesday morning and afternoon)

- overview of fire protection designs
- fire modeling
- fire resistant materials
- structural modeling

Lunch/breaks: NIST cafeteria

Concur on vision and begin parallel break-out sessions (Tuesday, late afternoon) (Bill Pitts, LR-B; John Gross, B111; Ed Garboczi, B113)

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WORKSHOP MECHANICS (2/2)

Dinner, informal discussion (7 pm):
Mrs. O'Leary's, 555 Quince Orchard Rd.

Parallel break-out sessions (Wednesday morning) (Bill Pitts, LR-D; John Gross, B111; Ed Garboczi, B113)

Report out (spokepersons)

Discussion among all participants, leading to recommendations and assignments

Adjourn (4 pm Wednesday)

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